

# CLAIMS

What is claimed is:

- 1           1.       A method for counteracting lens vignetting, comprising:  
2           resetting pixels of an image sensor; and  
3           reading pixels of the image sensor after they have been reset such that the time  
4           between resetting and reading is greater for pixels adjacent edges of the sensor than  
5           for pixels adjacent a center of the sensor.
- 1           2.       The method of claim 1, wherein resetting pixels comprises resetting  
2           pixels on a line-by-line basis across the image sensor.
- 1           3.       The method of claim 2, wherein resetting pixels further comprises  
2           resetting pixels beginning from one edge of the sensor and ending at an opposite edge  
3           of the sensor.
- 1           4.       The method of claim 2, wherein resetting pixels further comprises  
2           resetting pixels beginning from the center of the sensor and ending at opposite edges  
3           of the sensor.
- 1           5.       The method of claim 1, wherein resetting pixels comprises resetting all  
2           sensor pixels at substantially the same time.

1           6.       The method of claim 1, wherein reading pixels comprises reading  
2   pixels beginning from one edge of the sensor and ending at an opposite edge of the  
3   sensor.

1           7.       The method of claim 1, wherein reading pixels comprises reading  
2   pixels beginning from the center of the sensor and ending at opposite edges of the  
3   sensor.

1           8.       The method of claim 1, wherein reading pixels comprises reading  
2   pixels such that pixel exposure time increases as a function of distance from the center  
3   of the sensor.

1           9.       The method of claim 1, wherein reading pixels comprises reading  
2   pixels such that reading of pixels spaced from the center of the sensor is delayed  
3   relative to reading of pixels adjacent the center of the sensor so that exposure time for  
4   the pixels spaced from the center of the sensor is greater than for pixels adjacent the  
5   center of the sensor.

1           10.      The method of claim 1, wherein reading pixels comprises reading  
2   selected pixels of selected lines so as to form a curved read line representative of  
3   progression of pixel reading across the sensor.

1           11.      The method of claim 1, wherein reading pixels comprises reading  
2   pixels such that pixels are reset and read with a varying relative speed of progression.

1           12.     The method of claim 11, wherein reading pixels further comprises  
2     resetting pixels at a constant reset rate and adjusting the speed at which pixels are read  
3     such that a pixel reading rate is higher adjacent the center of the sensor as compared  
4     to adjacent edges of the sensor.

1           13.     The method of claim 1, wherein pixels are reset and read such that  
2     exposure times are increased for the sensor pixels as a function of their distance from  
3     the center of the sensor in both a horizontal and a vertical direction.

1           14.     The method of claim 1, wherein reading pixels comprises reading  
2     pixels beginning at the center of the image sensor and spiraling outward so that pixels  
3     adjacent the center of the sensor are read first and pixels adjacent edges of the sensor  
4     are read last.

1           15.     A method for counteracting lens vignetting, comprising:  
2           resetting pixels of an image sensor in a line-by-line manner; and  
3           reading pixels of the image sensor after they have been reset, wherein the  
4     pixels are read such that:

5                     (a)     relative to a direction of progression across the image  
6                     sensor, reading of pixels spaced from a center of the image sensor is  
7                     delayed relative to reading of pixels adjacent the center of the sensor  
8                     such that exposure time for pixels spaced from the center of the sensor  
9                     is greater than for pixels adjacent the center of the sensor, and

10                    (b)     pixels are reset and read with a varying relative speed of  
11                    progression such that a pixel reading rate is higher adjacent the center  
12                    of the sensor as compared to adjacent edges of the sensor.

1           16.     The method of claim 15, wherein resetting pixels further comprises  
2     resetting pixels beginning from one edge of the sensor and ending at an opposite edge  
3     of the sensor.

1           17.     The method of claim 15, wherein resetting pixels further comprises  
2     resetting pixels beginning from the center of the sensor and ending at opposite edges  
3     of the sensor.

1           18.     The method of claim 15, wherein reading pixels comprises reading  
2     pixels such that pixel exposure time increases as a function of distance from the center  
3     of the sensor.

1           19.     The method of claim 15, wherein pixels are reset and read such that  
2     exposure times are increased for the sensor pixels as a function of their distance from  
3     the center of the sensor in both a horizontal and a vertical direction.

1           20.     A system for counteracting lens vignetting, comprising:  
2             a solid-state image sensor including a plurality of randomly-accessible pixels;  
3     and  
4             logic configured to read sensor pixels after they have been reset such that the  
5     time between resetting and reading is greater for pixels adjacent edges of the sensor  
6     than for pixels adjacent a center of the sensor.

1           21.     The system of claim 20, wherein the image sensor comprises a  
2     complimentary metal oxide semiconductor (CMOS) sensor.

1           22.     The system of claim 20, wherein the logic is configured to read pixels  
2     in a manner in which pixel exposure time increases as a function of distance from the  
3     center of the sensor.

1           23.     The system of claim 20, wherein the logic is configured to read pixels  
2     in a manner in which reading of pixels spaced from a center of the sensor is delayed  
3     relative to reading of pixels adjacent the center of the sensor such that exposure time  
4     for pixels spaced from the center of the sensor is greater than for pixels adjacent the  
5     center of the sensor.

1           24.     The system of claim 20, wherein the logic is configured to read pixels  
2     in a manner in which pixels are reset and read with a varying relative speed of  
3     progression.

1           25.     A system for counteracting lens vignetting, comprising:  
2             means for collecting light; and  
3             means for reading the means for collecting light, the means for reading being  
4     configured to read such that an exposure time for portions of the means for collecting  
5     light adjacent its center is less than an exposure time for portions of the means for  
6     collecting light data adjacent its edges.

1           26.     The system of claim 25, wherein the means for collecting light data  
2     comprise a complimentary metal oxide semiconductor (CMOS) sensor that includes a  
3     plurality of randomly-addressable pixels.

1           27.     The system of claim 25, wherein the means for reading are configured  
2     to read the randomly-addressable pixels in a manner such that pixel exposure times  
3     increase as a function of distance from the center of the sensor in both a horizontal  
4     and a vertical direction.

1           28.     A digital camera, comprising:  
2           a lens system;  
3           a solid-state image sensor that receives light transmitted by the lens system,  
4     the image sensor including a plurality of randomly-accessible pixels; and  
5           a counter-vignetting algorithm that is configured to reset sensor pixels and  
6     then read the reset pixels in a manner in which the time between resetting and reading,  
7     and therefore pixel exposure, is greater for pixels adjacent edges of the sensor than for  
8     pixels adjacent a center of the sensor.

1           29.     The camera of claim 28, wherein the solid-state image sensor  
2     comprises a complimentary metal oxide semiconductor (CMOS) sensor.

1           30.     The camera of claim 28, wherein the counter-vignetting algorithm is  
2     configured to read pixels in a manner in which pixel exposure time increases as a  
3     function of distance from the center of the sensor.